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ABSTRACT

Secondary and postsecondary students who use the read-answer-discuss strategy while studying read ineffectively and do not comprehend or retain main ideas. A study examined the effectiveness of (1) the Directed Reading-Thinking Activity, (2) conceptual mapping, (3) a combination of those strategies, and (4) reading and underlining main ideas as strategies for helping students remember main ideas. Subjects, 48 freshman composition students at a large public university, were assigned to one of the four instructional approaches. They were also categorized as high or low aptitude students according to their SAT scores. The students had four weeks of their respective instruction, and practiced their study approach on two take-home essays. A third, 50-minute in-class essay was examined for the number of main ideas and subordinate ideas students recalled from reading an essay on which their own essays were subsequently based. Results showed that low aptitude students who used both directed reading and conceptual mapping, and those who read and underlined, recalled significantly more main ideas than students who used directed reading alone. For high aptitude students, none of the approaches had a significant effect on their ability to recall. The findings suggest that mapping alone is not effective, but that mapping and directed reading, and reading and underlining, significantly affect comprehensivon and retrieval. (Fifteen references are included.) (JC)

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Directed Reading-Thinking Activity, Conceptual Mapping, and Underlining: Their Effects on Expository Text Recall in a Writing Task

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Often reading instruction in secondary and post-secondary content-area classrooms relies on one approach: assign-read-answer-discuss. Using this approach, an instructor assigns reading without commenting on the purpose for using the text, and students read outside of class before returning to answer questions posed during a discussion (Vacca, 1981). Students frequently read ineffectively because they do not know about expository text organization or how to assess their background knowledge and to predict the thesis and its development in an expository text. Students have difficulty finding main ideas and forming a gist of what they read (Winograd, 1984; Kennedy, 1971). Once finishing an assignment, students may not use strategies to help them remember and organize what they have read.

The Directed Reading-Thinking Activity (Stauffer, 1969) is a group-inquiry reading approach for guiding readers through a text during the first time they read it in a classroom. A teacher provides the strategies for reading by asking students to predict what will be explained next in a text and, after they read silently, to verify their predictions by referring to evidence in in the text. According to Tierney and Cunningham (1984), few researchers have investigated DR-TA for its effects on comprehension instruction. Also, conceptual mapping (Hanf, 1971; Buckley & Boyle, 1981; Davidson, 1982) is an instructional

approach for readers to organize information they learned from a text or recalled from their background knowledge in a diagram of their own design.

PURPOSE OF THE STUDY

This study investigated the effects of four instructional approaches to reading informational expository essays on students' recall of main ideas and high subordinate ideas when they write a summary-analysis essay based on an assigned topic. The first purpose was to contrast four instructional approaches to reading : (1) DR-TA, an interactive reading approach that uses group inquiry, (2) mapping, a reading recall strategy, (3) a combination of DR-TA and mapping, and (4) reading for main ideas and underlining, an approach often used in high school and college courses. This purposes was evaluated by examining the effects of instruction on recall for high aptitude and for low aptitude readers in each instructional condition. Aptitude was based on their SAT verbal score.

The second purpose for the study was to explore what effects each approach had on college students' ability to recall ideas from an expository text through the process of discriminating among ideas in a text to find their hierarchical importance (Meyer, Brandt & Bluth, 1980; Eamon, 1978-79; Brown & Smiley, 1977). Both purposes were evaluated through an examination of students' essays that were a summary and an analysis of what they had read (Taylor & Beach, 1984).

This report will focus on the following research questions:

(1) Will essays from developmental students in two aptitude

groups, (a) low SAT verbal score and (b) high SAT verbal score, differ for each of the four conditions for the variables, (1) recall of main ideas and (2) recall of high subordinate ideas?

(2) How many main ideas and high subordinate ideas and details recalled from an expository text do students in the mapping condition (Group 1) and the DR-TA and mapping condition (Group 3) include in their maps and their essays? Is there a difference in recall between their maps and their essays?

DESIGN AND PROCEDURES

The following explanation is a brief summary of the study's design and procedures. Also, the study investigated more questions than the two presented in this report. A thorough account is available in Draheim (1986; 1987).

Subjects

The subjects for the study were college freshmen at a large public university. All were enrolled in a developmental writing course. Students were placed in the course if they scored below 600 on the English Composition Test of the College Entrance Examination Board, and if their holistic score on a written essay administered by the University's developmental writing program was eight or greater on a scale ranging from two to twelve. The University's Office of Admissions and Records randomly assigned students to sections of the writing course. This study was conducted in four out of twenty-six sections of the course offered during the Fall, 1986 semester.

In order to comply with the University's Committee to Protect Human Subjects' approval of the study, students could

elect to participate in the study by giving permission to have their essays and written work photocopied and analyzed. Fifty-nine students out of seventy-five elected to participate. Of the fifty-nine, forty-eight reported SAT verbal scores. Students who scored below a median of 445 on the SAT verbal exam for the forty-eight students comprised a low aptitude group and students above 445 formed a high aptitude group. Thus, total N for the study was forty eight, with two aptitude groups of twenty-four students each. Table One indicates the number of high and low aptitude readers there were in each of the four conditions.

TABLE ONE

Number of Students By Condition in Two Aptitude Groups

Condition	Low SAT	High SAT
(1) Mapping	9	4
(2) DR-TA	4	9
(3) DR-TA & Mapping	6	6
(4) Underlining	5	5

Instructors

Four experienced instructors who had taught the developmental writing course a minimum of three years volunteered to participate in the study by receiving training in using DR-TA and mapping during a summer session immediately preceding the fall, 1986 semester research project. All claimed that they routinely used the read, underline, and reread approach, so they did not receive additional training in this instructional approach during the summer session. All claimed limited familiarity with mapping and no familiarity with DR-TA. During training, one of the four

volunteers elected to drop out of training and was unavailable to teach during the fall semester research project.

Upon completion of training during the summer session, the researcher attempted to randomly assign the three remaining instructors to the DR-TA, mapping, or DR-TA and mapping treatment groups. However, one of the three instructors was reluctant to teach the treatment randomly assigned to her. In order to insure equality in teaching across treatment groups, the researcher assigned these instructors to treatment groups after talking with them together about their preferences for teaching a particular treatment.

A fourth instructor for the read, underline, and reread treatment group was a volunteer from instructors for the fall semester who had a minimum of three years experience in teaching the writing course. During the fall study, all instructors met twice a week to discuss readings and to construct writing topics with the purpose of maintaining uniformity during instruction.

Treatment

There were three experimental treatment groups and one control group:

Group 1: Mapping
Group 2: Directed Reading-Thinking Activity
Group 3: Directed Reading-Thinking Activity and Mapping
Group 4: Control, instruction to identify main ideas and underline them in a text.

The study was a training study. Over a four and one-half week period, students in all sections did three reading and writing assignments. Reading assignments were attributive (Meyer, Haring, Brandt & Walker, 1980) and informational expository essays. Writing assignments for the first two readings were

take-home essays. During the first reading and writing assignment, students in each group received instruction according to their assigned instructional approach. During the second reading and writing assignment, students used their assigned instructional approach with their instructor's guidance. The third reading and writing assignment provided data for analysis. Particularly, students in all four conditions wrote a fifty minute in-class essay two days after the last discussion and instructional class session on a reading assignment by Paul Roberts called "Something About English" (1980). Students in Groups 1 and 3 also made maps for this reading assignment after reading. Essays were analyzed from all students as well as maps from students in Groups 1 and 3. All students wrote on the following summary-analysis topic:

> Assume that before reading Roberts' essay "Something About English" you knew little about how the English language developed. What are two (or more) principles or themes that you now think are important for understanding how the English language developed? Explain them and explain why you focus on them.

In this study, students in all conditions could not use maps or notes they prepared during class discussions or during study while writing the fifty minute essay; however, during the fifty minute writing period, they could construct an organized plan for their essay if they wished. All students were told to plan their time by using five to ten minutes to plan their essay, thirty minutes to write, and ten minutes to reread and edit their essays.

Data Analysis

In a pilot study, the researcher had two readers identify

main ideas, high subordinate ideas, and details in the Roberts' essay by using Johnson's (1970) procedure for discerning levels of generality in exposition.

Two raters coded students' essays for main ideas and high subordinate ideas recalled and selected from Roberts' essay. Verbatim statements, paraphrases, and gist statements were coded. The raters obtained high interrater reliability (r=.95).

The researcher coded students' maps for words and phrases from the Roberts' essay that were main ideas or high subordinate ideas.

Two-way analysis of variance (ANOVA) using the cell means model with Dunn's method of planned comparisons was used for testing for statistical significance.

FINDINGS

The first research question asked: Will essays from developmental students in two aptitude groups, (1) low SAT verbal score and (2) high SAT verbal score, differ for each of the four conditions for the variables (a) recall of main ideas and (b) recall of high subordinate ideas? Two contrasts between treatments for low-aptitude developmental students were statistically significant for recall of main ideas. First, low-aptitude developmental students in Group 3 recalled significantly more main ideas than low-aptitude developmental subjects in Group 1 (t=2.513, p=.01). Second, low-aptitude developmental students in the control group (Group 4) recalled significantly more main ideas than low-aptitude developmental students in Group 1 (t=2.54, p=.008). No other contrasts between conditions for the low aptitude groups were

significant. Means and standard deviations for the four groups are presented in Table Two.

Table Two

Means and Standard Deviations Between Conditions, Low Aptitude Group, for Recall of Main Ideas

Group	Mean	Standard Deviation
Group 1	3.56	2.88
Group 2	7.50	4.65
Group 3	8.33	5.04
Group 4	10.60	3.85

For high-aptitude developmental students no contrasts between conditions were significant for recall of main ideas. Means and standard deviations are presented in Table Three.

Table Three

Means and Standard Deviations By Condition, High Aptitude Group, for Recall of Main ideas

Condition	Mean	Standard Deviation
Group 1	7.0	4.08
Group 2	9.4	3.16
Group 3	11.5	6.36
Group 4	11.0	6.36

For low-aptitude developmental students, no contrasts between conditions were significant for recall of high subordinate ideas. Interestingly, students in Group 2 did not recall any high subordinate ideas in their essays. Means and standard deviations follow in Table Four.

Table Four

Means and Standard Deviations By Condition, Low Aptitude Group, Recall of High Subordinate Ideas

Condition	Mean	Standard Deviation
Group 1	1.89	1.83
Group 2	0	0
Group 3	1.67	2.25
Group 4	2.0	1.58

Similarly for high-aptitude developmental students, no contrasts between conditions were significant for recall of high subordinate ideas. Means and standard deviations follow in Table Five.

Table Five

Means and Standard Deviations By Condition, High Aptitude Group, Recall of High Subordinate Ideas

Condition	Mean	Standard Deviation
Group 1	2.0	1.16
Group 2	3.56	2.19
Group 3	2.83	.98
Group 4	2.4	1.34

The second questions asked: How many main ideas and high subordinate ideas and details recalled from an expository text do students in the mapping condition (Group 1) and the DR-TA and mapping condition (Group 3) include in their maps and their essays? For Group 1 (mapping), the mean for recall of main ideas for low-aptitude developmental students in their maps was 9.29 versus a mean of 4.43 for recall of main ideas in their essays. For high-aptitude developmental students in Group 1, the mean for recall of main ideas in the maps was 10.67 versus a mean for

recall of 5.33 in their essays. In Group 1 (mapping), both low- and high-aptitude developmental students recalled many main ideas as they constructed their maps, but recalled approximately 48 percent of these main ideas in their essays.

Similarly, students in Group 1 in both aptitude groups recalled dramatically fewer high subordinate ideas in their essays in contrast to their recall in their maps. For low-aptitude developmental students, the mean for recall in their maps was 5.0 and 2.5 for their essays. They recalled 50 percent of the ideas found in their maps when they wrote their essays. For high-aptitude developmental students, the mean for recall was 8.1 in their maps and a mean of 2.4 in their essays. They recalled 30 percent of the high subordinate ideas found in their maps when they wrote.

In contrast, low- and high-aptitude developmental students in Group 3 (DR-TA and mapping) recalled a high number of main ideas both in their maps and in their essays. For low aptitude students, the mean for recall of main ideas in their maps was 11.25 versus a mean of 10.25 for their essays. High aptitude students recalled a mean of 14.0 main ideas in their maps and a mean of 12.0 in their essays. Low aptitude students remembered 91 percent of the main ideas in their maps when they wrote, and high aptitude students recalled 86 percent of the main ideas in their maps as they wrote their essays.

For recall of high subordinate ideas, low-aptitude developmental students in Group 3 recalled a mean of 1.89 ideas in their maps and 1.5 in their essays. They recalled 79 percent of the ideas found in their maps as they wrote their essays. For high-

aptitude developmental students, the mean of recall in their maps was 3.9 and 3.0 in their essays. They recalled 76 percent of the ideas found in their maps as they wrote their essays.

DISCUSSION AND CONCLUSION

By examining the effect of treatment on two aptitude groups, the findings revealed that for the low-aptitude developmental group, the instruction given in the control group (Group 4) and in the DR-TA and mapping group (Group 3) had more effect on recall of main ideas than did mapping or DR-TA instruction alone. Also, DR-TA instruction (Group 2) had a greater effect on recall of main ideas than mapping instruction had for low-aptitude developmental students. In contrast, for high-aptitude developmental students, none of the four treatments had a significant effect statistically on recall of main ideas. Thus, for low-aptitude developmental students, reading instruction which directed them to main ideas and to the structure of essays affected their recall more than mapping instruction alone.

For recall of high subordinate ideas, both aptitude groups revealed no statistically significant differences in contrasts of treatment groups. Interestingly, developmental students with low SAT verbal scores in the DR-TA group (Group 2) did not recall any high subordinate ideas in their essays. Perhaps DR-TA alone has little effect on encoding and retrieval of high subordinate ideas in contrast with a treatment of DR-TA and mapping used together or mapping alone. This finding needs further research to determine how DR-TA or mapping affect retrieval of high subordinate ideas.

Analysis of maps and essays for Group 1, mapping, and Group 3, DR-TA and mapping, revealed that Group 1 students in both aptitude groups are recalling a high number of main and high subordinate ideas as they constructed their maps, but they are not retrieving these ideas when they write. Students were recalling approximately 50 percent fewer main ideas and high subordinate ideas in their essays than they recalled in their maps. Interestingly, their essays did not include many ideas from the Roberts' essay; rather, students used their own ideas without support from the reading assignment. They developed broad generalizations and typically used ideas students mentioned in class from their general knowledge about changes to the English language rather than selecting text-specific information. Students in the other three treatments typically wrote generalizations that were text-specific. Furthermore, essays in all conditions were approximately the same length, so no group wrote significantly more than another group.

Limitations to the study include length of the study for it was conducted over a four and one-half week period rather than a longer period. The three experimental treatments were new instructional approaches for students, whereas the control approach was not a new strategy for students in the control group. A longer study would allow new instructional approaches to be accommodated so that students can make connections between new learning and old knowledge. Also, instructional approaches were directed to reading rather than to their influence on planning in writing. Thus, mapping was not used as a pre-writing strategy in

this study. However, the study was designed to examine recall during writing without the help of a map or notes prepared during discussion and study time.

These findings suggest that mapping alone is not an effective instructional approach that directs developmental students to recall main ideas and high subordinate ideas when writing about an informational text they recently read when they cannot refer to their maps. Instructional approaches such as DR-TA and mapping (Group 3) or the control approach (reading to find main ideas) that model reading strategies significantly affect encoding of information and retrieval of information from an attributive essay when students must produce an essay about ideas they recalled and selected from that reading assignment.

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